

FEATURE ARTICLE

Low-Wage Workers: Who Are Likely To Go For Training And Do They Benefit?

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EXECUTIVE SUMMARY

- This study finds that among the low-wage workers (LWWs), those with lower education levels and those in less-skilled occupations, specifically cleaners, labourers & related workers, are less likely to participate in training. This suggests that access to training opportunities may vary for LWWs. Furthermore, LWWs with union memberships are more likely to attend training than their counterparts without memberships.
- In addition, the study finds that LWWs who participated in some form of structured training benefitted directly through an increase in wages. Specifically, workers who attended training enjoyed an average wage increase of 3.1 per cent in the year in which the training took place. This finding further confirms the importance of skills upgrading for LWWs.

The views expressed in this paper are solely those of the author and do not necessarily reflect those of the Ministry of Trade and Industry or the Government of Singapore.

INTRODUCTION

In recent years, the Singapore government has placed greater emphasis on skills upgrading for low-wage workers (LWWs), in line with continuing education and training efforts for the whole workforce. For example, the Workfare Training Support (WTS) scheme was introduced in 2010 to encourage more LWWs to attend training by subsidising 95 per cent of their course fees, and was recently enhanced to include additional courses.

Given these ongoing efforts, two questions naturally arise. First, among the LWWs, are there specific characteristics which lead to higher training participation rates? Clarity on this issue will help policymakers design more targeted policies to encourage LWWs to attend training. Second, do LWWs benefit from such training programmes and if so, what are the causal returns to training in terms of wages? The conventional belief is that training upgrades the skills of LWWs and enhances their productivity, which should then lead to increased wages for LWWs.

This study attempts to address these two questions using a longitudinal survey dataset on LWWs covering the period from 2007 to 2009. The rest of the article is organised as follows. The next section covers a review of the literature on the causal returns to training in other countries as well as Singapore. The subsequent section describes the data and methodology employed for the study. The results of the regressions are then presented and discussed. The final section concludes.

LITERATURE REVIEW

Studies on the causal returns to training have generally produced mixed results. For example, a 1996 study on the Job Training Partnership Act (JTPA) in the US finds positive and statistically significant returns to training for adults but not for youths.² In particular, the returns for out-of-school youths after 30 months of training are statistically insignificant, and ranged from -8.1 per cent to 3.5 per cent. In a separate study examining the impact of public sector sponsored training in Germany, the returns to training are found to be statistically significant and negative in the short term, possibly due to lock-in

¹ I would like to thank Jessica Pan, Yong Yik Wei and Kuhan Harichandra for their inputs to this study.

² See Bloom et al (1997).

effects (i.e. training participants have less time for job search).³ In the longer run, however, participants record significant and positive returns.

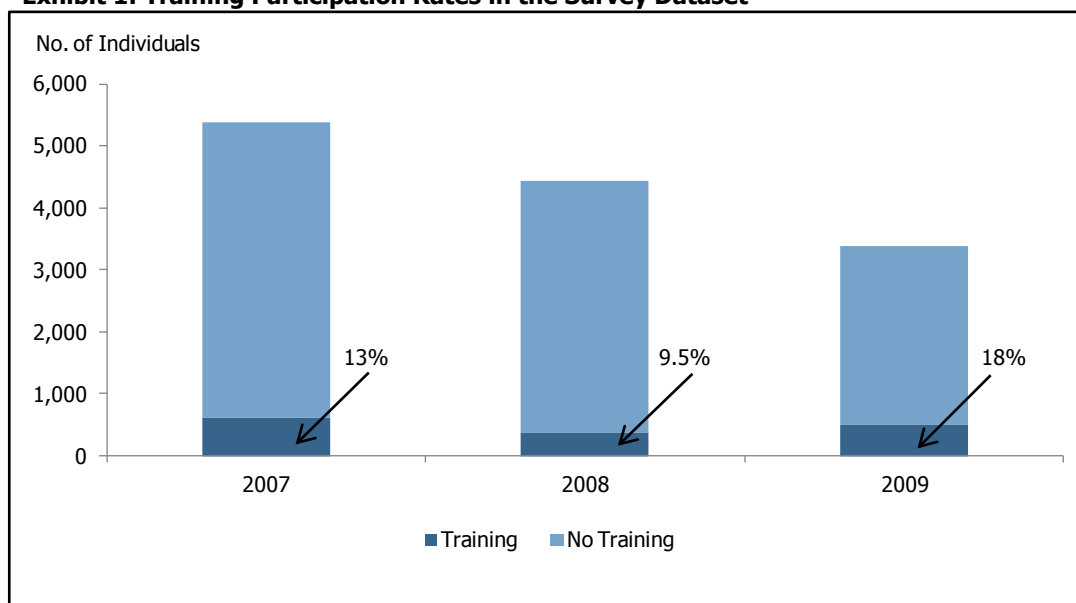
In Singapore, a 2006 study using data from the Ministry of Manpower's Labour Force Survey finds that workers who reported getting a pay-rise/promotion after training are likely to be LWWs.⁴ In a more recent study commissioned by the Workforce Development Agency (WDA) which focuses on the impact of Workforce Skills Qualifications (WSQ) training on wages from 2008 to 2010, LWWs with at least one Statement of Attainment (SOA) are found to have wages that are 2.6 per cent to 4.6 per cent higher than those without SOAs.⁵ In addition, those who obtained full qualifications⁶ are found to have wages that are 7.6 per cent higher compared to those with SOAs but without full qualifications.

DATA AND METHODOLOGY

The survey dataset used in this study covers 6,000 Singaporean LWWs tracked over three years from 2007 to 2009. As part of the survey, respondents were asked to indicate whether they received any structured training⁷ in each year. Hence, the training variable in the dataset captures all the structured training attended by the sample of LWWs across the three years.

Based on the data, the training participation rates of LWWs (i.e., share of LWWs who attended training) tend to be low, ranging from 9.5 per cent to 18 per cent over the three years [Exhibit 1]. By contrast, the annual labour force survey reports a participation rate of approximately 30 per cent for the entire labour force in recent years.

Exhibit 1: Training Participation Rates in the Survey Dataset



³ See Lechner, Miquel, Wunsch (2011).

⁴ See Thangavelu et al (2006).

⁵ See Workforce Development Agency's media release, "New Study Reveals Positive Impact of WSQ Training on Wages", dated 6 June 2013. Accessed on 15 Oct 2013.

http://www.wda.gov.sg/content/wdawebsite/L209-001About-Us/L219-PressReleases/06_Jun_2013.html

⁶ Full qualifications are awarded upon obtaining the required number of SOAs within a specific WSQ course framework.

⁷ This refers to all forms of structured training, whether conducted by government agencies, individuals, employers or companies.

To assess the determinants of training participation among LWWs, a binary training variable is regressed against the workers' characteristics. The regression specification is as follows⁸:

$$P_i = \beta_0 + \beta_1 X_i + \beta_2 H_i + \beta_3 Q_i + \varepsilon_i$$

Where:

P_i is a binary variable indicating training participation;

X_i is a vector of observable personal characteristics such as age, marital status and educational level;

H_i is a vector of observable household characteristics that include number of household members, governmental and nongovernmental assistance received;

Q_i is a vector of observable job characteristics comprising occupation, industry, tenure at current job, employment type, union membership and weekly hours worked;

ε_i denotes the error term.

To estimate the causal returns to training in the next part of the study, there is a need to find a regression specification that addresses the problem of selection.⁹ Simply put, workers who receive training are likely to be systematically different from workers who did not receive training because the decision to participate in training is not randomly assigned to individuals. For example, workers of lower ability may be more likely to choose to participate in training to improve their skills, but they are also more likely to have lower wages because of their lower ability. Since it is not possible to observe the innate ability of workers in the data, a simple regression will suffer from omitted variable bias and lead to estimates that systematically understate the returns to training.

In an attempt to properly isolate the causal effect of training on wages, this study utilises a fixed-effects model that exploits the panel structure of the dataset. Through the fixed-effects model, unobserved individual characteristics, such as emotional quotient and innate ability, that are time-invariant and yet affect the individual's wage and decision to participate in training are controlled for. The estimate of the returns to training from the model can then be cleanly interpreted as the wage change associated with a change in the training status of an individual over time, rather than the result of unobserved differences across individuals that affect their decision to participate in training. Compared to relying on cross-sectional data, this fixed-effects approach provides more reliable estimates of the returns to job training.

The main regression specification is thus:

$$Y_{it} = \beta_0 + \beta_1 T_{it} + \beta_2 X_{it} + \gamma_t + \delta_i + \varepsilon_{it}$$

Where:

Y_{it} is the log wage for individual i in time t ;

T_{it} is a dummy variable that identifies the treatment and control groups;

X_{it} is a vector of observable personal, household and job characteristics that can change over time, such as marital status, education level, governmental assistance received and occupations;

γ_t is a vector of year dummies that captures effects common to all individuals in the specific year;

δ_i denotes the individual time-invariant fixed effects;

ε_{it} is the error term assumed to be uncorrelated with the independent variables across all time periods.¹⁰

The coefficient β_1 is the parameter of interest which will indicate if workers who experienced a change in training status from 0 to 1 between 2007 and 2009 also experienced a significant increase in earnings in the year of training.

⁸ For this regression which focuses on the characteristics of workers, only observations in the base year 2007 are used as attrition and other factors have led to the samples in subsequent years being less representative.

⁹ See for instance, Angrist and Pischke (2009) for a formal discussion of the selection problem.

¹⁰ This is the parallel trend assumption underpinning a fixed-effects model. A check conducted using the survey dataset does not refute this assumption. The check is conducted by examining if training participation in 2009 is affected by the wage profile between 2007 and 2008 and the results suggest that there is little evidence that this is so.

RESULTS AND DISCUSSION

The results of the regression on the determinants of training participation among LWWs show that less-educated LWWs are less likely to participate in training. For example, as compared to a LWW with Secondary 'N' or 'O' Level education, a LWW without any formal education is 3.6 per cent less likely to participate in any form of structured training. In addition, LWWs in occupations with lower skills intensity like cleaners and labourers are less likely to participate in training. Both these results suggest that among the LWWs, access to training opportunities can vary.

The study also finds that union membership is likely to increase training participation rates among LWWs. For example, workers with union membership are 12 per cent more likely to participate in training than a non-unionised worker [Exhibit 2].¹¹ This may be because unionised occupations or industries are likely to have functions and roles that are more structured and hence have specific training courses catered to them. Additionally, unions may also increase the bargaining power of LWWs, institutionalise training plans for them and raise the awareness of training opportunities among union members.

Exhibit 2: Regression Results for Determinants of Training Participation in 2007

Dependent Variable	Training Participation
<u>Education</u> (Base Group: Secondary 'N'/'O' Levels)	
No Formal Education	-0.0361**
PSLE	-0.0203*
JC/ITE	0.0369
Polytechnics	0.0575*
University & Above	0.0579
<u>Occupations</u> (Base Group: Craftsmen & Related Trade Workers)	
Associate Professionals & Technicians	0.0322
Service & Sales Workers	0.0506**
Plant & Machine Operators & Assemblers	-0.0370
Cleaners, Labourers & Related Workers	-0.0401*
<u>Union Membership</u> (Base Group: Non-unionised workers)	
Has Union Membership	0.118***
Observations	4,032

*, ** and *** denote significance at the 10%, 5% and 1% levels respectively.

In terms of the returns to training, the results of the fixed-effects regression show that LWWs benefit from structured training. In particular, participation in structured training is found to raise the wages of LWWs by 3.1 per cent [Exhibit 3]. It should also be highlighted that this positive causal return to training is on top of year-to-year increments that the control group (i.e., workers who did not participate in training) experienced. As such, the results provide evidence of positive returns to training and re-affirm the importance of skills upgrading for LWWs.¹²

Moreover, even after restricting the sample to workers with no formal education, PSLE or Secondary 'N' or 'O' Level education across the three years, the returns to training still remain positive and statistically significant, albeit lower at 2.4 per cent. This lower magnitude may be due to workers of different education levels attending different types of training. Nonetheless, the results suggest that even the less-educated LWWs stand to benefit from structured training.

¹¹ Only the main findings are presented here.

¹² The results are qualitatively similar if an alternate specification that estimates returns by comparing wages one period before and after training participation in year 2008 is used.

Exhibit 3: Regression Results for Causal Returns to Training

	Full Sample	LWWs with Secondary 'N'/'O' Levels or Lower Education
Dependent Variable	Wages	Wages
Training Participation	0.0309***	0.0236**
Observations ¹³	13,174	11,465

*, ** and *** denote significance at the 10%, 5% and 1% levels respectively

CONCLUSION

This study finds that between 2007 and 2009, LWWs who were less educated and in less-skilled occupations tend to have a lower incidence of participation in structured training. Policymakers may thus wish to focus their attention on these groups of LWWs. The results also show that workers with union membership are more likely than their non-unionised peers to participate in training. As such, more efforts to reach out to non-unionised LWWs to encourage them to participate in training can also be explored.

In addition, this study finds that workers who participated in some form of structured training between 2007 and 2009 experienced an average wage increase of 3.1 per cent. This result re-affirms the importance of skills upgrading for LWWs. There is scope for further research in this area. For example, further studies could assess the types of training which would benefit the LWWs the most, and examine the post-training wage profile over a longer time period.

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¹³ Observations here refers to the number of data-points, e.g. each individual can contribute up to at most three data points for the three years and minimally two to meet the requirement of the fixed-effects model. Only a subset of the 6,000 respondents is included in the regressions because not all respondents provided information for the variables required. Also, there is sample attrition across the years. This attrition is found to be not systematic, i.e. sample characteristics of remaining individuals largely do not differ from the base 2007 sample.

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